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(11) **EP 0 869 415 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
15.12.1999 Bulletin 1999/50

(51) Int. Cl.⁶: **G05B 9/03, G06F 11/20**

(43) Date of publication A2:
07.10.1998 Bulletin 1998/41

(21) Application number: **98109082.2**

(22) Date of filing: **15.03.1993**

(84) Designated Contracting States:
BE DE ES FR GB IT NL

(30) Priority: **31.03.1992 US 864931**

(62) Document number(s) of the earlier application(s) in
accordance with Art. 76 EPC:
93908318.4 / 0 631 673

(71) Applicant:
THE DOW CHEMICAL COMPANY
Midland, Michigan 48674 (US)

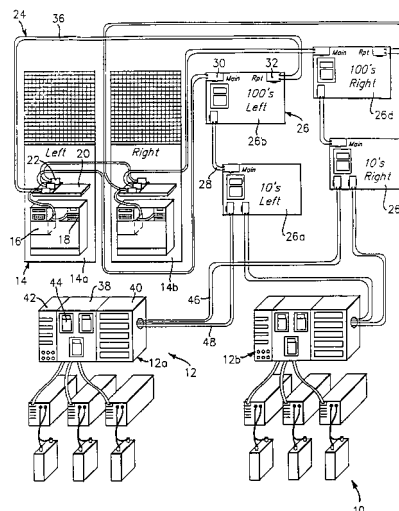
(72) Inventors:
• **Glaser, Robert S.**
Midland, MI 48640 (US)
• **Hoy, Robert S.**
Warren, MI 48093 (US)
• **Fernandez, Paul G.**
Midland, MI 48640 (US)
• **Grai, Timothy J.**
Saginaw, MI 48603 (US)

• **Gaudreau, Dean W.**
Midland, MI 48640 (US)
• **Hozeska, Robert J.**
Saginaw, MI 48609 (US)
• **Grinwis, Donald J.**
Midland, MI 48642 (US)
• **Gavit, Gregory J.**
Freeland, MI 48623 (US)
• **Sheehan, Joseph Jr.**
Lake Jackson, TX 77566 (US)
• **Thomas, Lowell V.**
Midland, MI 48642 (US)

(74) Representative:
Prechtel, Jörg, Dipl.-Phys. Dr. et al
Patentanwälte,
H. Weickmann, Dr. K. Fincke,
F.A. Weickmann, B. Huber,
Dr. H. Liska, Dr. J. Prechtel,
Dr. B. Böhm, Dr. W. Weiss,
Kopernikusstrasse 9
81679 München (DE)

(54) **Process control interface system having triply redundant remote field units**

(57) A process control interface system (10) having a network of distributed triply redundant input/output field computer units (12). The system includes a plurality of self-contained remotely located triply redundant field computer units (12) connected to decision making redundant process control computers (14) through a bi-directional communication network having at least two concurrently active communication channels (46, 48). Each of the field computer units include a set of at least three redundant field computers (92, 94, 96) for arbitrating both input and output signals. The field computer units also include individual abort circuits (510, 606) for each output signal to be transmitted to a device (84, 86) which affects the operation of the physical process. These abort circuits effectively enforce the output value signals arbitrated independently through each of the three redundant field computers using a voting procedure.



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EUROPEAN SEARCH REPORT

Application Number
EP 98 10 9082

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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		11 October 1999	Kelperis, K
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			

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Application Number
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The present search report has been drawn up for all claims				
Place of search THE HAGUE		Date of completion of the search 11 October 1999	Examiner Kelperis, K	
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>				

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Place of search		Date of completion of the search	Examiner
THE HAGUE		11 October 1999	Kelperis, K
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			

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Application Number
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Place of search THE HAGUE		Date of completion of the search 11 October 1999	Examiner Kelperis, K
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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Application Number
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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☒ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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**LACK OF UNITY OF INVENTION
SHEET B**

Application Number
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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-43

Triply redundant control system including means for data arbitration

2. Claims: 44-46

A power supply system

3. Claims: 47-51

redundant control system including resetting means in case of error in a controller

4. Claims: 52-78

Method for non intrusive testing for a control system

5. Claims: 79-90

method for direction of communications in a computer network

6. Claims: 91-94

Method for forming a communication network n triply redundant computer control system

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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